The Uses and Limits of Economic Analysis: Experience From Work on Defense Issues

Six months ago I consented to write a brief paper and appear on this panel to defend it. That agreement was rash. The issue seemed titillating but straightforward. Having wrestled with it now for several months it seems elusive and hard to deal with. The question is: How far does application of the tools of economics get you toward meaningful and usable analysis of public policy issues in the defense area? Beyond that, what more is needed, what is the contribution of other disciplines?

Let me approach the question indirectly by way of a paradox: in better than ten years working as an analyst and manager of analysts in the national security area, I have done very little of what I was taught to do in graduate school (and of what I have in turn taught to graduate students). On the other hand, when I think about what kind of people I would like to have more of on my staff, those who are always high on the list of priority are people who know applied economics and have a good practical bent. Ignoring the possibility of irrational behavior on my part, how can both of these statements be true?

The resolution of the paradox lies with the properties of the structure within which important public choices are made and in part, with the habits of thought sometimes acquired along with the paraphernalia of the economist's kit of tools. The habits of thought imparted, at least into some graduate students of economics, include the following:

1. A propensity to try to structure activities in terms of their outputs and inputs;

2. A tendency to ask for a specification of opportunity costs;

3. A propensity to assume that marginal returns to any activity are likely to be diminishing;

4. An inclination to see if decisions can be decentralized and to ask whether lower level managers are provided incentives congruent with those of higher level management.

Beyond these habits, familiarity with the tools of econometric and statistical analysis and manipulation of formal models is also useful.

It seems to be the case that at some stage in the consideration of nearly any major public policy question, the questions arising from these habits of thought are the right ones to ask. They are not the right ones to ask at every stage, and answers to them are not sufficient to deal with all of the issues surrounding most complicated public policy choices, but they are certain to be required at some stage.

Let me illustrate this by drawing on four areas in which I have been involved with work of the work of the Congressional Budget Office and of the Intelligence Community Staff over the last three years: defense manpower policy, strategic force posture, general purpose force posture, and zero-based budgeting for intelligence.

In the manpower area, the key issues could be structured in terms of relations between the public sector as purchaser and the private sector as provider of manpower services. There is a tradition in this area--stemming back to the work of the Gates Commission--of looking quantitatively at determinants of the supply of manpower, for example: youth unemployment, term of enlistment, and military salary. In arguing

that a combination of shrinking cohorts of 18-year-olds, declining youth unemployment, and a declining ratio of military-to-civilian pay would cause supply shortfalls in the 1980s, CBO was in the mainline of a body of work that was perfectly straightforward and academically respectable economics. In order to devise cost/effective policies to eliminate this problem, however, it was necessary also to look at the demand side--at service behavior--to see whether there were ways that the services were unnecessarily driving up demand for new recruits. As it turned out, it appeared that patterns of service personnel management were causing excessive personnel turnover and driving up demand.

In the same general area of defense manpower, there were a number of other labor market issues: compensation of blue collar employees of the Department of Defense and treatment of military retirement that required transferral to a new setting of perfectly ordinary and straightforward tools of economic analysis. The real contribution of an economist as policy analyst in these areas was to recognize the relevance of supply and demand and production analysis and to apply them to the new setting.

CBO's work with strategic forces similarly drew upon a field of economic analysis. Here the objective of the work was to enrich the public debate on strategic force issues--at that time the B-1, the M-X, and Trident programs--by laying out the criteria against which strategic force effectiveness was measured, showing how those criteria were pushing us in the direction of increased force size, and challenging the meaningfulness of those criteria. As laid out in the Defense Department Annual Report for Fiscal Year 1978, the basic

criterion was to ensure that U.S. strategic forces could inflict sufficient damage on the Soviet economy to ensure that Soviet recovery to major power status would be delayed longer than that of the U.S. Estimates of the damage required to accomplish this objective drew heavily on input/output relations. The CBO paper argued that such input/output analysis, based on pre-war coefficients, was largely irrelevant to post-nuclear war circumstances. There was no reason to expect production relations to remain fixed; capital/labor ratios would doubtless shift; and external considerations--for example, access to foreign trade and capital--might well be more important than the details of destruction of fixed production facilities and population. In addition to challenging the criteria, the work also examined the logic of counterforce exchanges as well as addressing various crisis and long-term stability considerations. In this work, although there is some drawing upon a body of economic analysis--input/output analysis--most of the discussion proceeded quite unrelated to any work that could be traced back to economic literature.

The third study area concerned choices facing the United States in augmenting general purpose forces stationed in Europe or assigned to NATO. The fundamental line of argument began with the observation that U.S. and Allied capabilities are unevenly distributed across the West German frontier. Since it appeared that the marginal value of force increments was not the same all along the line, the paper focused on how to provide more capability where NATO was the weakest (generally in Allied sectors) and challenged the value of improvements that were

directed elsewhere. In addition, analyses of some particular force elements emphasized the game-like or "general equilibrium" structure of combat, where each side is looking for ways of taking advantage of gaps in the other side's capability and where such gaps provide a high marginal value application for resources.

For example, in air defense, fighters, surface-to-air missiles, and antiaircraft artillery form an interlocking system; absence of capability of one type or in some area offers an adversary opportunities to devise tactics that take advantage of the deficiency and that reduce the effectiveness of other defenses.

Although none of this sounds very much like economics, the borrowing of concepts of diminishing marginal returns and complementarity of production activities is apparent.

Finally, in the last instance I would like to cite, in going through zero-based budgeting exercise in the Executive Branch, one focus of Intelligence Community Staff review of budget submissions from component agencies has been on whether decentralized priorities submitted by the program managers match those of the central decisionmaker, the Director of Central Intelligence. Public discussion of ZBB has tended to focus on the "zero base" review. In my view, the most useful aspect of ZBB, however, is in the structure that it provides for formal communication and aggregation of priorities from lower level units. Given these priorities, a higher level organization can focus on searching for discrepancies between higher level and lower level priorities, following a strategy that focuses on cases where such discrepancies are likely and allowing the priorities of lower level decisionmakers to prevail elsewhere.

In these examples, there are some analyses that draw on literature in the core of economics. But there is much more that, although it is not "economics", rests on the habits of thought I cited earlier: focusing on inputs and outputs, looking for opportunity costs, looking at marginal returns, and seeing if decisions can be decentralized. The role in such work of basic economic concepts seems to me to be to focus questions, to provide cues for useful modes of analysis, and to provide an efficient language with which the concepts can be communicated among analysts and between analysts and responsible officials.

This is why, although very little of the work cited is "economics", people with economics training are useful. The point is not that economics is peculiarly useful to addressing all decision problems at all levels. Rather, at some level and some point in the process of making policy on defense matters, the problems can be appropriately structured as problems of maximization subject to constraints. The study of such choices is, of course, the core of economic thought.

In thinking further about the role of economics and its limits, it is important to realize that none of these studies led directly to any final government action. In fact, it is rare for any single study to lead to final action. To understand why, it is important to remind ourselves that there are at least three characteristics of government "decisionmaking":

1. It is <u>ongoing</u> in the sense that decisions are made again and again and choices once made are likely subsequently to be revisited if the issue is of any importance at all;

2. The process of deciding is deliberative in the sense that although rational argument is not the sole determinant of the outcome, it does count.

3. Decisions are "aggregative" in the sense that they may be made at one level and then readdressed at a higher level of government, where the opportunity costs are drawn from a larger domain, and where the range of values being traded at the margin is more extensive.

These characteristics mean that although studies are relevant, there is no single study that is sufficient for guiding all decisionmakers who may address a particular problem. Consider, for example, the case of a decision as to whether to buy the XM-1 tank. Within the Army, competing designs would be developed and evaluated; physical data, combat simulations, cost and risk assessments would be relevant. Analysis would focus on whether the XM-1 or some other tank would be preferred. At the level of the Secretary of Defense, the relevant analyses would include whether the scenarios against which the Army choice was designed were sufficiently interesting to warrant investing in a new tank or whether other needs were more pressing. At the level of OMB and Presidential review, concern might focus on the effect of Army force enhancements on relations with our allies. For the Congress, yet other considerations, including impact on home districts, become relevant.

At each stage, a different analysis, focusing on different values and choices, is required. The role of economic modes of analysis does not, unfortunately, vary monotonically with the level at which a decision is being addressed. Although I can't demonstrate the truth of the proposition conclusively, I think the importance of the basic

questions listed above, is greater as the range of relevant choices and opportunity costs is broader the meaningful options are more dissimilar. But, that is hard to demonstrate.

One can be more specific, however, on the importance of two kinds of judgment in structuring a policy analysis: (1) what is the right decision to address and when--when will an item be actionable or ripe for decision, and (2) selection of the considerations that seem to be important for decision at each level. In order to do this effectively an analyst has to understand broadly how the system of which he is a part works. What are the action-forcing mechanisms and the timetable in which they function, and what are the capabilities of the various organizations with which he must deal to process information and to move in the directions he has in mind. The study of politics and organizational process can provide some structured insight into such issues, although the focus of academic work in these fields tends to be on why things never change rather than on manipulation.

In these areas, as well as in economics, it is probably the case that most of the value to a policy analyst is contained in a small number of concepts that have broad applicability, and that are not very complex. Their distillation, however, I must leave to others.